ULTEM™ RESIN 9090

REGION AMERICAS

DESCRIPTION

Polyetherimide Blend with improved Ductility and Detergent resistance. Meets FAR 25.853 and OSU 55/55 heat release and provides low toxicity, smoke and flame evolution.

INDUSTRY	SUB INDUSTRY
Industrial	Defense, Additive Manufacturing, Additive Materials
Mass Transportation	Aircraft Interiors, Rail

TYPICAL PROPERTY VALUES

Revision 20181122

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 5 mm/min	95	MPa	ASTM D 638
Tensile Stress, brk, Type I, 5 mm/min	90	MPa	ASTM D 638
Tensile Strain, yld, Type I, 5 mm/min	7	%	ASTM D 638
Tensile Strain, brk, Type I, 5 mm/min	85	%	ASTM D 638
Tensile Modulus, 5 mm/min	2900	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	140	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	3000	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	97	MPa	ISO 527
Tensile Stress, break, 50 mm/min	80	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	7	%	ISO 527
Tensile Strain, break, 50 mm/min	80	%	ISO 527
Flexural Stress, yield, 2 mm/min	136	MPa	ISO 178
Flexural Modulus, 2 mm/min	2800	MPa	ISO 178
IMPACT			
Izod Impact, notched, 23°C	70	J/m	ASTM D 256
Izod Impact, Reverse Notched, 3.2 mm	3300	J/m	ASTM D 256
Instrumented Impact Total Energy, 23°C	88	J	ASTM D 3763
Instrumented Impact Total Energy, 0°C	99	J	ASTM D 3763
Instrumented Impact Total Energy, -20°C	88	J	ASTM D 3763
Instrumented Impact Ductility, 23°C	100	%	ASTM D 3763
Instrumented Impact Ductility, 0°C	100	%	ASTM D 3763
Instrumented Impact Ductility, -20°C	90	%	ASTM D 3763
Izod Impact, unnotched 80*10*4 +23°C	NB	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*4 -30°C	NB	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	6	kJ/m²	ISO 180/1A
Izod Impact, notched 80*10*4 -30°C	6	kJ/m²	ISO 180/1A
Charpy Impact, notched, 23°C	11	kJ/m²	ISO 179/2C
THERMAL			
HDT, 0.45 MPa, 6.4 mm, unannealed	214	°C	ASTM D 648

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PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
HDT, 1.82 MPa, 6.4 mm, unannealed	204	°C	ASTM D 648
CTE, -20°C to 150°C, flow	5.6E-05	1/°C	ASTM E 831
CTE, -20°C to 150°C, xflow	5.5E-05	1/°C	ASTM E 831
Thermal Conductivity	0.19	W/m-°C	ASTM C177
CTE, 23°C to 150°C, flow	5.E-05	1/°C	ISO 11359-2
CTE, 23°C to 150°C, xflow	5.E-05	1/°C	ISO 11359-2
Vicat Softening Temp, Rate A/50	219	°C	ISO 306
Vicat Softening Temp, Rate B/50	212	°C	ISO 306
Vicat Softening Temp, Rate B/120	212	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	205	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	190	°C	ISO 75/Ae
PHYSICAL			
Specific Gravity	1.28	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.5 – 0.7	%	SABIC method
Melt Flow Rate, 337°C/6.6 kgf	10	g/10 min	ASTM D 1238
Density	1.28	g/cm³	ISO 1183
Melt Volume Rate, MVR at 360°C/5.0 kg	14	cm³/10 min	ISO 1133
FLAME CHARACTERISTICS			
OSU total heat release (2 minute test)	15	kW-min/m²	FAR 25.853
OSU peak heat release rate (5 minute test)	45	kW/m²	FAR 25.853
Vertical Burn a (60s) passes at	1	sec	FAR 25.853
Oxygen Index (LOI)	46	%	ASTM D 2863
NBS Smoke Density, Flaming, Ds 4 min	0.7	-	ASTM E 662
INJECTION MOLDING			
Drying Temperature	150	°C	
Drying Time	6 – 8	hrs	
Drying Time (Cumulative)	24	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	355 – 390	°C	
Nozzle Temperature	345 – 390	°C	
Front - Zone 3 Temperature	345 – 390	°C	
Middle - Zone 2 Temperature	335 – 390	°C	
Rear - Zone 1 Temperature	330 – 390	°C	
Mold Temperature	130 – 160	°C	
Back Pressure	0.3 – 0.7	MPa	
Screw Speed	40 – 70	rpm	
Shot to Cylinder Size	40 – 60	%	
Vent Depth	0.025 – 0.076	mm	

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